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TECHNICAL BULLETIN AND POLICY

Natural Gas Pipe Bonding
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It has come to the attention of the Bureau of Electrical Safety and Licensing that there may be confusion relative to bonding of metallic gas piping due to a Technical Bulletin, TB2006-04, issued by the Gastite Division of Titeflex Corporation. This Technical Bulletin is being issued to provide a better understanding of the requirements for bonding metal gas piping and a clarification of the "Gastight" Technical Bulletin.

NFPA 54, the Natural Fuel Gas Code, offers general criteria for the installation and operation of gas piping and gas equipment on consumers' premises. Under Saf-c 6009.01, (a) of the State Fire Code, the 2002 edition of NFPA 54 is adopted. This edition of NFPA 54 simply states that the gas piping had to be bonded to any grounding electrode as defined in the National Electrical Code. The 2006 edition of NFPA 54, not yet adopted in the State of New Hampshire, is more specific and basically mirrors the language in the National Electrical Code. Section 7.13 states that each aboveground portion of a gas piping system that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas piping shall be considered to be bonded when it is connected to appliances that are connected to the equipment grounding conductor of the circuit supplying that appliance.

Section 250.104 of the National Electrical Code (NFPA 70-2005) covers bonding of piping systems and exposed structural steel. Section 250.104 (B) covers the bonding of metal piping systems, including gas piping, that are likely to become energized and are installed in or attached to a building or structure. As noted in the commentary in the NEC Handbook, what "likely to become energized" means is that where metal piping systems and electrical circuits interface through mechanical and electrical connections within equipment, a failure of electrical insulation can result in the connected piping system(s) becoming energized. With that thought in mind, it is our opinion that the "circuit that is likely to energize the piping system(s)" is the one that is supplying the appliance.

Piping systems covered by 250.104 (B) are required to be bonded to the service equipment enclosure, the grounded conductor at the service, the grounding electrode conductor where of sufficient size, or to one or more grounding electrodes used. The bonding jumper(s) shall be sized in accordance with 250.122, using the rating of the circuit that is likely to energize the piping system(s). The equipment grounding conductor for the circuit likely to energize the piping system(s) shall be permitted to serve as the bonding means. Typically, the use of an additional bonding jumper is not necessary to comply with the bonding requirement of 250.104 (B) because the equipment grounding connection to the non–current-carrying metal parts of the appliance also provides a bonding connection to the metal piping attached to the appliance.

In accordance with the Technical Bulletin TB2006-04 issued by the Gastight Division of the Titeflex Corporation, metal piping associated with their "Gastight" flexible gas piping installations must be bonded to the grounding electrode system of the structure in accordance with the NEC. In addition to the NEC requirements, the bonding connection must be made by a bonding clamp and wire. It is their desire that this connection be made in as close a proximity to the panelboard as practical. Close proximity of the bonding point to the gas meter is also desirable. Further, the wire, at a minimum, must be sized for the full amperage of the service. There is no definitive explanation of just what is meant by the "full amperage of the service" included in the technical bulletin. It is likely the minimum size of this bonding conductor will have to be in accordance with Table 250.66.

In closing, it is the opinion of the Bureau of Electrical Safety and Licensing that the general bonding requirements of 250.104 (B) will apply to gas piping unless "Gastight" components are used. However, there is no prohibition to additional connections. If "Gastight" components are used, then the bonding must be in accordance with the manufacturer's instructions. Section 110.3 (B) of the National Electrical Code would require listed or labeled equipment to be installed and used in accordance with any instructions included in the listing or labeling.

In all cases both NFPA 54 and 70 prohibit the gas piping to be used as a grounding electrode system.